W. H. CONE.

ELECTRICAL RECORDER.

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1,088,129.

Patented Feb. 24, 1914

Fig. 1.

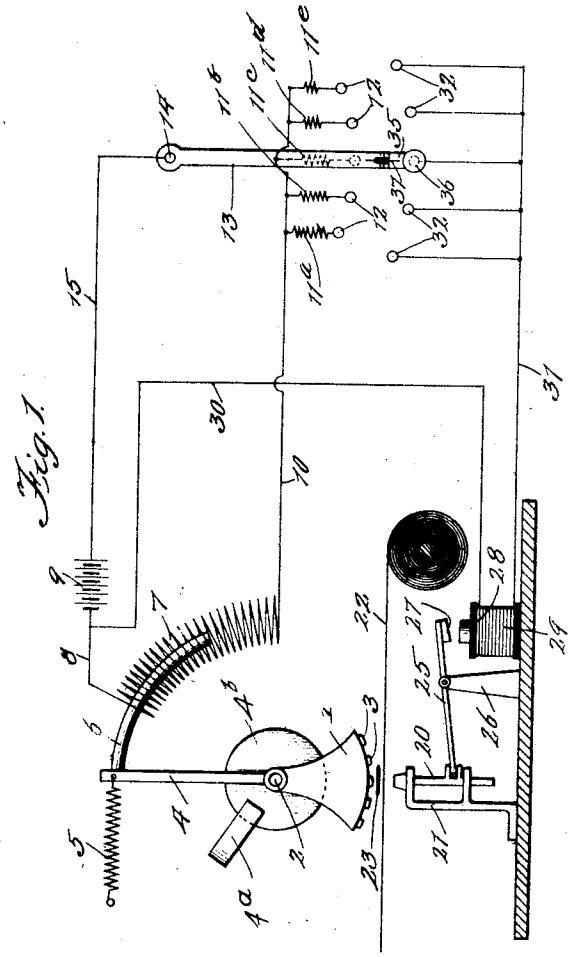
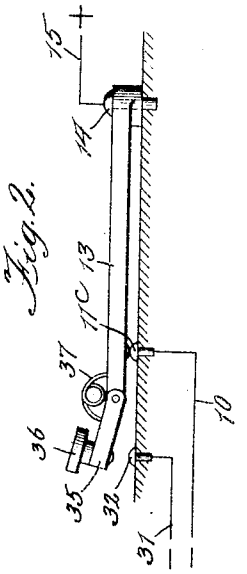


Fig. 2.



Witnesses.

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ELECTRICAL RECORDER.

1,088,129. Specification of Letters Patent. Patented Feb. 24, 1914.

Application filed March 7, 1911. Serial No. 613,777.

To all whom it may concern:

Be it known that I, WILLIAM H. CONE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electrical Recorders, of which the following is a specification.

My invention relates to electrical recorders and the object of the invention is to provide simple and efficient apparatus for recording at a distance symbols or information sent from the transmitting point.

Ancillary to the general object of the invention, it is my purpose to provide apparatus in which the recording element may be moved to proper position and the act of printing be accomplished through the manipulation of a single controlling arm.

I accomplish my objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view showing the complete apparatus. Fig. 2 is a side elevation of the controller arm.

Similar reference characters denote like parts in the two views.

In the type of apparatus selected to illustrate the invention the printing element 1 is pivoted upon a stationary shaft 2 and is provided with a number of type characters 3 arranged upon the arc of a circle centered at the axis of shaft 2. Printing element 1 is rotated by means of an arm 4 to bring the various type characters to printing position. A spring 5 constantly urges arm 4 in one direction, and the arm is moved in the opposite direction, against the force of the spring, by means of a core 6 of the solenoid 7. The construction is such that the stronger the current passing through said solenoid, the greater will be its drawing action upon the core. In consequence, by varying the strength of current in the solenoid, arm 4 will be rotated to different positions and bring different type characters to the printing point. To prevent undue vibration or swinging of the printing element dead beat mechanism is provided. In the present form this consists of a permanent magnet 4^a adapted to act upon a disk 4^b rigidly connected to the printing element 1. One terminal of the solenoid 7 is connected by a conductor 8 to a battery 9 or other source of substantially constant potential. The other terminal of the solenoid is connected by a conductor 10 to a set of resistances 11^a, 11^b, 11^c, 11^d and 11^e. These resistances are graduated in amount, with the result that the strength of current in the solenoid will depend upon the particular resistance in circuit. The number of resistances in the set may, of course, be varied for machines of various capacities, the number of resistances corresponding to the number of different types 3 upon the printing element 1. Each of the resistances 11^a, 11^b, et cetera, is connected to one of a set of contacts 12. A controller arm 13 is pivoted upon a post 14 in such position as to swing over the contacts 12 and make electric connection with them one at a time. Arm 13 is at all times in electric connection with the remaining terminal of the battery 9, being connected thereto by the conductor 15.

From the above description taken in connection with the drawings it will be apparent that by moving the controller arm 13 to the different contacts 12 the strength of current in the solenoid 7 will be varied, thus rotating the printing element 1 to a position corresponding with the particular contact in engagement with the controller arm.

The printing mechanism, in the form of apparatus here illustrated, comprises a hammer 20 mounted within a guide frame 21 in such position as to be movable radially toward and from the type. The tape 22, upon which the printing is to be done, passes between the hammer and the type element, and an inked ribbon 23 is interposed between the tape and the type at the printing point. Hammer 20 is reciprocated by a lever 25 fulcrumed upon a standard 26 and operated by an armature 27 adapted to be attracted to the core 28 of an electromagnet 29. One terminal of said electromagnet is connected by the conductor 30 to the conductor 8 above mentioned, while the other terminal of said electromagnet is connected by a conductor 31 to a series of branch conductors leading to a set of contacts 32. Contacts 32 are adapted to be engaged by an auxiliary arm 35 articulately connected to the controller arm 13. Said auxiliary arm is operated preferably by means of a key 36 and is normally held in raised position by a spring 37.

In operation, the operator grasps the key 36 and, permitting it to remain in raised position, swings it and the arm 13 to en-

gage one of the contacts 12. This throws into circuit one of the resistances 11^a, 11^b, et cetera, and thereby regulates the strength of current, causing the solenoid 7 to exert a definite amount of pull upon the core 6 and rotate the element 1 to bring the corresponding type into position. The operator then depresses the key 36, and brings the auxiliary arm 35 into engagement with the underlying contact 32, thereby establishing the circuit through the magnet 29 and causing it to operate the hammer 20 to print. It will thus be seen that both the type operating and the printing devices are operated from a common handle and from a single source of electromotive force. The mechanism is simple in operation and construction and rapid in its action.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In an electrical recorder, the combination of a movable type element, a solenoid adapted to move it to different positions depending upon the strength of current in said solenoid, a source of electromotive force of substantially constant potential, graded resistance, a controller arm for throwing different amounts of said resistance into series with said source and said solenoid for varying the current in the latter, an auxiliary arm adapted to move the main arm to different positions, and an electromagnetically operated printing device controlled by said arms.

2. An electrical recorder comprising a movable type element, a solenoid adapted to move it to different positions, depending upon the strength of current in said solenoid, a source of electromotive force, graded resistance, a controller arm for varying the amount of said resistance in series with said source and said solenoid for varying the current in the latter, an auxiliary arm carried by the main arm and adapted to move said main arm to different positions, and an electromagnetically operated printing device controlled by said arms, said auxiliary arm being normally on open circuit and closable at will for operating said printing device.

3. An electrical recorder comprising a rotary type element, a spring urging said type element in one direction, a solenoid for rotating said type element in opposition to the force of said spring, the amount of movement depending upon the strength of current flowing through said solenoid, a source of electrical energy for said solenoid, graded resistance for varying the strength of current flowing through said solenoid from said source, a controlling arm for varying the amount of said graded resistance in circuit, an electromagnetically operated printing device coöperating with said type element, and means including an auxiliary arm on said controlling arm for operating said printing device.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM H. CONE.

Witnesses:
HOWARD M. COX,
MARGARET D. ROBB.